might be good subjects for hypnotic experiments, rather than employ the professionals, many of whom are doubtless tricksters. He referred to the wide interest which is exhibited now throughout the whole world in the prosecution of psychical research.

The committee on work, or suggestions as to possible work, stated that they had sent out circulars to the members of the society, calling for volunteers as members of the investigating committees; that they had received a number of answers; that the most of them were from those specially interested in thought-transference; and they recommended the appointment of a committee on that subject. They also suggested that a circular should be issued by the society, describing the methods of making experiments in thought-transference, and pointing out the precautions to be taken. Such a committee has been appointed by the council, and will in a short time issue its circular, and commence work. It is thought best, that, in order to confine as far as possible the possibility of guessing correctly what is in a person's mind by mere chance, the object thought of should not be too simple; that is, if it is a figure, it should not be a circle, or a square, or harp-shaped. A word was suggested as a suitable thing to think of, or any one of the digits from one to ten.

There was a lengthy discussion, in which Drs. Minot and Bowditch, Professor Pickering, Col. Higginson, Dr. James, and others, took part. Many of the speakers advocated the employment of professionals, saying that it was nearly impossible, with many would-be honest mind-readers, to tell where their real power ended, and where fraud began. It was stated that some of the professionals confess that at times they eked out their powers with a mild deceit. It was felt by many that in testing professionals there would not be any feeling of restraint about using precautions against fraud; that it would be perfectly understood that all means for getting at the truth could rightfully and properly be employed.

For the present the work of the society will be confined largely to experiments on thought-transference. The committee on work hesitates to recommend to the members at large investigations in hypnotism, on account of the danger which would arise when they were carried on by inexperienced hands.

SOME RECENT EXPERIMENTS WITH OIL IN STOPPING BREAKERS.[1]

THE U. S. hydrographic office, in pursuance of its policy to lessen the dangers of navigation, has recently commenced the collection of information to determine the best manner of using oil to calm the surface of troubled waters.

This matter has long been a subject of controversy. In 1844 a Dutch commission, after pouring a few gallons of oil on the storm-beaten bosom of the North Sea, and finding the waves not sensibly affected declared that the oft-repeated account of the saving of ships by this means was a fantastic creation of the imagination. Notwithstanding this, Scotch coasters have saved themselves again and again by strewing the sea with the fatty parts of fish, cut into small pieces, which were carried with them for the purpose; and so much reliable information on this subject has now been collected from the common experience of seafaring men, that the evidence in its favor can no longer be controverted.

It must be understood, however, that the use of oil does not make the surface perfectly smooth, but merely lessens the dangerous effect of what the seaman calls 'combers,' or the great broken, rolling masses of water which have first disabled and then swamped so many ships since man first began to go down to the sea.

A case lately reported of the use of oil is that of the steamship Thomas Melville, while running before a gale in February, 1884, when she was constantly boarded by heavy seas. As her situation became more and more critical, it was determined to try what effect oil would have upon the water. Two canvas bags holding about a gallon were made, therefore, punctured in many places with a sail-needle, and filled with oil. These bags were hung over the bows, and allowed to drag in the water. The seas no longer came on board, and the safety of the vessel was secured. The bags were refilled every four hours.

The application of oil to the quieting of water at the entrances of harbors is one that has received very considerable attention; and credit is due to Messrs. Shields and Gordon of England for their energy and enterprise, as well as for the thought, time, and money expended in endeavoring to establish its use, and in bringing the subject into prominent notice.

At Folkestone, Eng., Mr. Shields's apparatus consisted of three large casks placed on shore at the end of the old mole. These were connected by pipes with small hand-pumps, each of which was worked by one man. Two lead pipes about an inch and a quarter in diameter extended from the casks along the bottom, through the entrance to the harbor, about 2,950 feet toward's Shakespeare's Cliff. At intervals of every hundred feet, vertical pipes were soldered to the main pipes; and in the former were placed conical valves properly protected from mud and slime by caps.

Unfortunately, on the day set apart for a public exhibition the weather was not entirely favorable; that is to say, the wind was not from the right direction. The sea, however, was sufficiently disturbed to show the working of the apparatus. When the oil was pumped through the tubes, it soon showed its effect upon the surface; and this became more apparent as the amount of oil was increased.

A broad glassy strip was soon distinguished which was more than a half-mile long. A fully manned lifeboat, which was sent into the oil-covered strips of water, was tossed about in a lively manner, but took in no spray. Meanwhile the sea outside of the strip was everywhere breaking into white caps. After

[1] Communicated by Capt. J. R. Bartlett, chief hydrographer of the navy.

stopping the pumps, it was found that the amount of oil used was a little over a hundred and nineteen gallons.

Three hours after the close of the trial, the Boulogne steamer passed broad strips of comparatively smooth water, on which the oil still lay.

After this experiment, two of Mr. Gordon's inventions were tried. One of these consists of a shell fired from a mortar, and so arranged that it bursts on striking the water, and frees its contents of oil. The shell is specially constructed, and has an ingenious device for insuring its explosion, which is effected by a fuze and gunpowder. This recommends itself as a practical means to render less dangerous the communication between ships by boats during heavy weather. In case of shipwreck, also, the approach of lifeboats could be greatly facilitated.

The second invention is an arrangement to make a lane of oil from the shore to a stranded ship. To effect this, an iron cylinder is fired from a mortar in the direction of the ship. The cylinder, which serves as an anchor, draws after it a leather hose fastened to it by a line. Oil is then pumped through the hose, and, being spread towards the shore by the wind, forms a quiet surface for the rescuing boat.

Various ingenious contrivances have been invented for applying the oil to the water; but the simplest and readiest, at the same time most effective, appliance is a canvas bag, either rather loosely sewed together, or pierced with small holes to allow the oil to escape. This has been the method adopted in the most successful cases reported from ships at sea, and has been found effectual in some of the lifeboats. It has the great advantage of being self-acting, insuring a regular stream of oil, and being easily renewed when exhausted.

In a vessel or boat running before a sea, one should be hung over each bow, which gives the oil time to spread before reaching far astern. In a ship, when hove to, one or more bags have sometimes been hung over the weather side, and sometimes been put overboard to windward, attached to light lines. This is the best plan, because, not drifting so fast as the ship, the bag will be carried to windward, and fulfil the condition of applying the oil to the water at some distance from the ship, in the direction from which the waves are advancing.

An open boat, unable to run before the sea, will always endeavor to put out some form of sea-anchor, with a rope attached to it: the bag of oil should be attached to this, and, failing every thing else, a boat's mast or a sail loosed is very effective.

When the boat is anchored, the bag could be attached by a light line to the anchor as a buoy. This appliance, in addition to being efficient, has the great merits of handiness and simplicity. Two such bags, holding about a gallon of oil each, with the line attached, might be kept full, and packed in a small cylinder similar to a paint-pot or a preserved-meat tin, and would form neither an expensive nor cumbersome article of equipment in a boat.

In the absence of these or similar contrivances, the oil could be poured from a bottle or can; but this would require a man's attention when one could be ill spared possibly, and might not insure so constant or regular a supply, which is of importance. This would not be applicable to a boat at anchor.

REPORT OF THE SUPERINTENDENT OF THE U. S. NAVAL OBSERVATORY.

THE report of Commodore S. R. Franklin, who succeeded Admiral Shufeldt as superintendent of the observatory on Feb. 21, gives, under date of Oct. 29, 1884, a summary of the work accomplished during the year. In organization a slight change has taken place by the appointment (by the superintendent) of a board consisting of the superintendent, the senior professor of mathematics, and the senior line-officer, to determine the scope and character of the work to be done. The board may be convened at the request of any member, and a weekly report is submitted to the superintendent every Monday by each officer in charge of an instrument.

The twenty-six inch equatorial, in charge of Professor Hall, has been employed mainly in observations of the satellites of Neptune, Uranus, Saturn, and Mars, and of double stars, with a few observations for stellar parallax. In the case of Uranus, the observations were confined mostly to the outer satellites; and it is proposed now to discontinue them, since the favorable time for determining the position of the orbit planes of these satellites has passed. The reductions are all well advanced.

The transit circle has been under the charge of Prof. J. R. Eastman, and has been employed in observations of the sun, moon, planets, comets, and a catalogue of miscellaneous stars, as in previous years. The nine-inch equatorial, in charge of Commander Sampson, has been used in observing comets, minor planets, and occultations. The series of observations with the prime vertical instrument was practically finished in May, 1884. The reductions are being carried on by Ensign Taylor. The meridian transit instrument has been used primarily to determine clock corrections, in connection with the daily time-service. Observations for the right ascensions of the sun, moon, and major planets, have also been made.

The time-service has been considerably extended. In addition to the lines already existing, the Baltimore and Ohio telegraph company looped two of its main circuits into the observatory, and the signal-service looped one. In March last a proposition was submitted to the heads of the several departments in Washington, to place in the more important offices of the government, including the executive mansion and the capitol, a clock that should be regulated and controlled every day from the observatory, which establishment should be responsible for the determination and transmission of correct time. This plan met with general approval; and an insulated circuit was established connecting the various offices, some twenty in number, with the observatory. In each